



## Oral Prophylaxis as a Preventive Dental Treatment: Does Motivation Play a Role?

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### Abstract

**Background:** Motivation for seeking oral prophylaxis is poorly understood and most often not explored for clinical purposes. There is presently a limited evidence of the influence of psychosocial factors on dental clinic attendance for oral prophylaxis. More information is needed for better formulation of dental health policy and the delivery of services.

**Objective:** This research therefore was to determine the role of motivational factors for oral prophylaxis as a preventive dental treatment during dental visits

**Methodology:** This was a cross-sectional study of 115 patients who presented in the periodontology clinic of the Dental Centre of the University of Benin Teaching Hospital for routine oral prophylaxis. The data collection instrument was a pre-tested interviewer administered questionnaire eliciting information on participants' demographic characteristics and past dental history. The Treatment Self-Regulatory Questionnaire (TSRQ) scale was used to assess participants' level of motivation. Simplified Oral Hygiene Index was used to assess participants' oral hygiene status and the Decayed, Missing, and Filled Teeth (DMFT) Index was used to assess their dental caries status.

**Results:** The mean scores for autonomous motivation, controlled motivation, and amotivation were  $5.31 \pm 1.04$ ,  $3.32 \pm 1.26$  and  $2.45 \pm 0.96$  respectively. The mean Relative Autonomous Motivation Index was  $1.99 \pm 1.37$ . Majority (81.3%) with good oral hygiene, 74.1% with a DMFT score of zero and 73.3% of participants who had undergone oral prophylaxis previously had a high mean scores for autonomous motivation ( $P > 0.05$ ) All the study participants had low amotivation scores.

**Conclusion:** It can be concluded that autonomous motivation plays a significant role in dental visits for oral prophylaxis resulting in desirable dental outcomes such as good oral hygiene status and reduction in dental caries experience.

**Keywords:** Oral Prophylaxis; Motivation; Preventive; Dental Treatment

### Introduction

Good oral health is essential for the improvement of an individual's overall health and well-being [1]. The hallmark of the preventive aspect of dentistry is to raise awareness in order to achieve overall health [2]. Regular, preventive dental attendance has been associated with better oral health status of the general population because it gives an opportunity to institute oral prophylaxis for prevention of oral disease as well as early detection of oral diseases [3-5]. However, dental clinic attendance is still not optimal in our environment [6-8].

Several socio-demographic, cultural and economic factors influence human behavior, attitude and habits and these factors may determine the utilization of oral health services [9,10]. Educational and motivational methods have been proven to be effective in improving oral health [2]. Motivation is a generic term that refer to needs, motives or desires that prompt action and it is the propulsive force for obtaining positive results in the task of the patient's

health education, individually or collectively [11]. Although some motives are innate, and others are acquired, individual response is modified by learning and influenced by culture [12].

The Theory of Planned Behavior (TPB) was intended to predict deliberate behavior, stating that humans are rational analyzers of a situation and that one's intention is actually what facilitates attitude and behavior [13]. TPB has been used for modeling intention to improve oral health-related behaviors, focusing on oral hygiene habits [14-16] restorative and prosthodontic care [17]. Another tool that measures why people engage in some healthy behavior, enter treatment for a medical condition, try to change an unhealthy behavior, follow a treatment regimen, or engage in some other health-relevant behavior is the Treatment Self-Regulatory Questionnaire (TSRQ), developed by Ryan and Connell [18]. It utilizes a general approach to assess autonomous self-regulation. The TSRQ has been used to study behavioral changes in patients with diabetes [19] and in patients undergoing tobacco cessation [20].

Motivations for seeking oral prophylaxis is poorly understood and most often not explored for clinical purpose. Therefore, it is important to determine the factors related to the demand for preventive oral care. This information will be valuable in the formulation of dental health policy and the delivery of oral health services. The objective of this study is therefore to investigate if motivational factors play a role in dental visits for oral prophylaxis as a preventive dental treatment as well as to determine the correlation between past dental history, oral hygiene status, dental caries status and patients' motivation for oral prophylaxis.

**Methodology**

This was a cross-sectional study of 115 patients who presented in the periodontology clinic of the Dental Centre of the University of Benin Teaching Hospital for routine oral prophylaxis. Informed consent was obtained from all the participants and ethical approval was obtained from the ethics and research committee of the Ministry of Health, Edo State, before commencement of the study. The data collection instrument was a pre-tested interviewer administered questionnaire eliciting information on participants' demographic characteristics and past dental history. The Treatment Self-Regulatory Questionnaire (TSRQ) scale [10] was used to assess participants' level of motivation. Simplified Oral Hygiene Index by Greene and Vermillion [21] was used to assess participants' oral hygiene status and the Decayed, Missing, and Filled Teeth (DMFT) Index [22] was used to assess their dental caries status.

The TSRQ scale has 15 items: 6 that assess autonomous motivation, 6 that assess controlled motivation, and 3 that assess amotivation. The autonomous motivation subscale consists of items #1, 3, 6, 8, 11, and 13; the controlled motivation subscale consists of items # 2, 4, 7, 9, 12 and 14; and the amotivation subscale consists of items # 5, 10, and 15. The responses were on likert scale 1 - 7. The responses on the autonomous items were averaged to form the reflection of autonomous motivation for the target behavior. The responses on the controlled items are averaged to form the reflection of controlled motivation for the target behavior and a motivated responses were also averaged. These three subscale scores were used separately. The minimum average in each case was 1 while the maximum was 7. Also, a Relative Autonomous Motivation Index was calculated by subtracting the average for the controlled reasons from the average for the autonomous reasons. Interpretation of autonomic and controlled motivation: 1.00 - 3.42-poor; 3.43 - 5.13-moderate, 5.14 - 7.00- high. Interpretation of amotivation scores: 1.0 - 4.9-poor; 5.0 - 5.9-moderate, 6.0 - 7.0-high. This is based on the fact that a neutral response or a response that does not agree with the statement (1 - 4) shows the patient is poorly influenced by that type of motivation.

The data obtained was analyzed using IBM Statistical Package for Social Science (SPSS) version 21.0. The analysis was done using frequency distribution and cross tabulations. Statistical significance with determined with chi square test. P < 0.05 was considered statistically significant.

**Results**

There were more females than males in this study (male: female ratio of 1:1.2). Majority of the study participants were less than 40 years (55.7%), had a tertiary level of education (84.3%) and had never had any previous dental prophylaxis (52.2%) (Table 1). The mean scores for autonomous motivation, controlled motivation, and amotivation were 5.31 ± 1.04, 3.32 ± 1.26 and 2.45 ± 0.96 respectively. The paired sample correlation showed statistically significant difference between mean score of autonomous motivation and mean score of controlled motivation (P = 0.001) between mean score of autonomous motivation and mean score of amotivation (P = 0.014) and between mean score of controlled motivation and mean score of amotivation (P = 0.029). The mean Relative Autonomous Motivation Index was 1.99 ± 1.37.

Characteristics	n (%)
<b>Age group (years)</b>	
< 40	64 (55.7)
≥ 40	51 (44.3)
<b>Gender</b>	
Male	55 (47.8)
Female	60 (52.2)
<b>Marital status</b>	
Single	59 (51.3)
Married	49 (42.6)
Widowed	7 (6.1)
<b>Highest level of education</b>	
Informal	3 (2.6)
Primary	7 (6.1)
Secondary	8 (7.0)
Tertiary	97 (84.3)
<b>Occupation</b>	
Highly skilled	14 (12.2)
Skilled	44 (38.2)
Unskilled	9 (7.8)
Retired	10 (8.7)
Students	38 (33.0)
<b>Previous dental prophylaxis</b>	
Yes	55 (47.8)
No	60 (52.2)
Total	156 (100.0)

**Table 1:** Demographic characteristics of the study participants.

Within the group with high mean scores for autonomous motivation, 81.3% had good oral hygiene (P = 0.049) and 74.1% had a DMFT score of zero (P = 0.075) and 73.3% had undergone oral prophylaxis previously (P = 0.754) (Table 2). Within the group with high mean scores for controlled motivation, fewer participants (6.3%) had good oral hygiene (P = 0.160), 12.1% had a DMFT score of zero (P = 0.050) and only 6.7% had undergone oral prophylaxis previously (P = 0.984) (Table 3). All the participants had poor scores on the amotivation scale.

	Autonomous motivation					
	Poor n (%)	Moderate n (%)	High n (%)	Total n (%)	X <sup>2</sup>	P value
<b>Oral hygiene status</b>						
Good	0 (0.0)	3 (18.8)	13 (81.3)	16 (100.0)	9.51	0.049
Fair	6 (7.9)	16 (21.1)	54 (71.1)	76 (100.0)		
Poor	4 (17.4)	9 (39.1)	10 (43.5)	23 (100.0)		
<b>DMFT Index</b>						
0	4 (6.9)	11 (19.0)	43 (74.1)	58 (100.0)	8.49	0.075
1-3	1 (2.9)	11 (31.4)	23 (65.7)	35 (100.0)		
> 3	5 (17.4)	6 (27.3)	11 (50.0)	22 (100.0)		
<b>Previous S and P</b>						
Yes	4 (8.9)	8 (17.80)	33 (73.3)	45 (100.0)	1.81	0.404
No	6 (8.60)	20 (28.6)	44 (62.9)	70 (100.0)		
Total	10 (8.7)	28 (24.3)	77 (67.0)	115 (100.0)		

**Table 2:** Relationship between autonomous motivation and clinical parameter and prophylaxis.

	Controlled Motivation					
	Poor n (%)	Moderate n (%)	High n (%)	Total n (%)	X <sup>2</sup>	P value
<b>Oral hygiene status</b>						
Good	4 (25.0)	11 (68.8)	1 (6.3)	16 (100.0)	6.58	0.160
Fair	41 (53.9)	31 (40.8)	4 (5.3)	76 (100.0)		
Poor	12 (52.2)	8 (34.8)	3 (13.0)	23 (100.0)		
<b>DMFT Index</b>						
0	29 (50.0)	22 (37.9)	7 (12.1)	58 (100.0)	9.50	0.050
1-3	14 (40.0)	20 (57.1)	1 (2.9)	35 (100.0)		
> 3	14 (63.6)	8 (36.4)	0 (0.0)	22 (100.0)		
<b>Previous S and P</b>						
Yes	22 (48.9)	20 (44.4)	3 (6.7)	45 (100.0)	0.03	0.984
No	35 (50.0)	30 (42.9)	5 (7.1)	70 (100.0)		
Total	57 (49.6)	50 (43.5)	8 (7.0)	115 (100.0)		

**Table 3:** Relationship between controlled motivation and clinical parameter and prophylaxis.

Greater percentage in each category of the participants' demographic characteristic had a high score of autonomous motivation, except among participants with primary level of education where majority (42.9%) had moderate score for autonomous motivation

(P = 0.013) (Table 4). Majority, in each category of the participants' demographic characteristic, had low scores of controlled motivation without any exception (P > 0.05) (Table 5).

	Autonomous motivation					
	Poor n (%)	Moderate n (%)	High n (%)	Total n (%)	X <sup>2</sup>	P value
<b>Age group (years)</b>						
< 40	4 (6.3)	16 (25.0)	44 (68.8)	64 (100.0)	1.08	0.583
≥ 40	6 (11.8)	12 (23.5)	33 (64.7)	51 (100.0)		
<b>Gender</b>						
Male	3 (5.5)	16 (29.1)	36 (65.5)	55 (100.0)	2.33	0.312
Female	7 (11.7)	12 (20.0)	41 (68.3)	60 (100.0)		
<b>Marital status</b>						
Single	4 (6.8)	13 (22.0)	42 (71.2)	59 (100.0)	5.32	0.256
Married	4 (8.2)	12 (24.5)	33 (67.3)	49 (100.0)		

Widowed	2 (28.6)	3 (42.8)	2 (28.6)	7 (100.0)		
<b>Highest level of education</b>						
Informal	2 (66.7)	1 (33.3)	0 (0.0)	3 (100.0)	16.18	0.013
Primary	2 (28.6)	3 (42.9)	2 (28.6)	7 (100.0)		
Secondary	1 (12.5)	1 (12.5)	6 (75.0)	8 (100.0)		
Tertiary	5 (5.2)	23 (23.7)	69 (71.1)	97 (100.0)		
<b>Occupation</b>						
Highly skilled	0 (0.0)	6 (42.9)	8 (57.1)	14 (100.0)	10.76	0.216
Skilled	3 (6.8)	10 (22.7)	31 (70.5)	44 (100.0)		
Unskilled	2 (22.2)	1 (11.1)	6 (66.7)	9 (100.0)		
Retired	2 (20.0)	4 (40.0)	4 (40.0)	10 (100.0)		
Students	3 (7.9)	7 (18.4)	28 (73.7)	38 (100.0)		
Total	10 (8.7)	28 (24.3)	77 (67.0)	115 (100.0)		

**Table 4:** Relationship between autonomous motivation and demographic characteristics.

	Controlled Motivation			Total n (%)	X <sup>2</sup>	P value
	Poor n (%)	Moderate n (%)	High n (%)			
<b>Age group (years)</b>						
< 40	36 (56.3)	25 (39.1)	3 (4.7)	64 (100.0)	3.03	0.220
≥ 40	21 (41.2)	25 (49.0)	5 (9.8)	51 (100.0)		
<b>Gender</b>						
Male	27 (49.1)	23 (41.8)	5 (9.1)	55 (100.0)	0.77	0.682
Female	30 (50.0)	27 (45.0)	3 (5.0)	60 (100.0)		
<b>Marital status</b>						
Single	32 (54.2)	24 (40.7)	3 (5.1)	59 (100.0)	4.17	0.383
Married	23 (46.9)	21 (42.9)	5 (10.2)	49 (100.0)		
Widowed	2 (28.6)	5 (71.4)	0 (0.0)	7 (100.0)		
<b>Highest level of education</b>						
Informal	2 (66.7)	1 (33.3)	0 (0.0)	3 (100.0)	3.1	0.756
Primary	3 (42.9)	4 (57.1)	0 (0.0)	7 (100.0)		
Secondary	4 (50.0)	4 (50.0)	0 (0.0)	8 (100.0)		
Tertiary	48 (49.5)	41 (42.3)	8 (8.2)	97 (100.0)		
<b>Occupation</b>						
Highly skilled	7 (50.0)	6 (42.9)	1 (7.1)	14 (100.0)	3.83	0.873
Skilled	21 (47.7)	20 (45.5)	3 (6.8)	44 (100.0)		
Unskilled	4 (44.4)	3 (33.3)	2 (22.2)	9 (100.0)		
Retired	5 (50.0)	4 (40.0)	1 (10.0)	10 (100.0)		
Students	20 (52.6)	17 (44.7)	1 (2.7)	38 (100.0)		
Total	57 (49.6)	50 (43.5)	8 (7.0)	115 (100.0)		

**Table 5:** Relationship between controlled motivation and demographic characteristics.

**Discussion**

Preventive dentistry traditionally assumes that most oral diseases are preventable with effective methods such as oral hygiene [23]. Health education most of the time is given in form of advice in the form of knowledge with the assumption that knowledge provided will cause a modification in attitude resulting in change in behavior [24].

It is very important that motivation of individuals be optimally explored and understood as the most difficult patients are thought to often be those at the highest risk with the lowest motivation [23].

Previous studies, to determine the relative importance of autonomous motivation and controlled motivation in the pursuit of personal goals, indicated that autonomous motivation was

substantially related to goal progress whereas controlled motivation was not [25]. This present study is in support of the previous studies because patients who routinely seek oral prophylaxis, even without any dental symptoms, had high scores of autonomous motivation and low scores of controlled motivation. The implication of this is that any intervention to encourage people to change their improper oral health behavior to proper ones will be more effective if it focuses on strengthening autonomous motivation rather than on reducing controlled motivation.

The level of an individual's autonomous motivation is determined by the level of fun and enjoyment the individual derives from the behavior and how important the individual believes the behavior is [25]. Lasting and effective changes in health behavior is brought about by participation rather than prescription [24].

On the other hand, controlled motivation is more extrinsic and it is determined by how much shame, guilt or anxiety the individual feels for not carrying out the behavior and how much somebody else wants them to carry out the behavior [25]. The difficulty associated with applied prevention has been acknowledged [23].

Adherence to behavioral regimens has been shown to be improved by enhancement of patients' autonomous motivation and perceived competence [26]. Therefore, interventions to improve oral health behavior should be designed such that the individuals derive fun and fulfillment from taking up the desired behavior and not just being compelled or pressured into carrying out the behavior

Motivation has been considered as the driving force for preventive oral health dynamics [27]. The need to encourage patients to identify and express their own dental health needs, explore their own attitudes and values as well as empowering them to make any necessary changes in their own life has been advocated [24].

This is supported by findings of this study as depicted by the high scores of autonomous motivation and low scores of controlled motivation.

Preventive oral health practice is influenced by the patient's past experience, family culture, values and social level [23-30]. This is also supported by findings of this study as only a few of those within the group with high mean scores for controlled motivations had undergone oral prophylaxis previously.

Traditional health education has been demonstrated to be unsuccessful in modifying health behavior [31,32]. Although, educational level has been shown to directly influence behavior regarding preventive measures for oral disease [27]. However, this does not translate to better motivation with increase in educational level as observed in this study.

It can be concluded that autonomous motivation played the greatest role in dental visits for oral prophylaxis resulting in desirable dental outcomes such as good oral hygiene status and reduction in dental caries experience. So therefore, strategies to improve oral health attendance and quest for oral prophylaxis should be targeted at autonomous motivation.

## Conclusion

It can be concluded that autonomous motivation plays a significant role in dental visits for oral prophylaxis resulting in desirable dental outcomes such as good oral hygiene status and reduction in dental caries experience.

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